CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of Serial No. 10/057,223 filed January 25, 2002, now U.S. Patent No. 6,774,300, which claims the benefit of provisional application Serial No. 60/287,205 filed April 27, 2001.

In the Specification:

On page 23, line 15, "9" should be changed to the lower case letter - - o - -.

The charge separation layer 39 is preferably made of a semiconductor material, or multiple semiconductors. Either inorganic semiconductor materials (e.g., titanium dioxide, zinc oxide, other metal and mixed metal oxides, moly sulfide, zinc sulfide, other metal and mixed metal sulfides, silicon carbide, etc.) or organic semiconductor materials, either hole conducting (e.g., triphenyldiamine (TPD), poly (p-phenylene vinylene) (PPV), poly (vinyl carbazole) (PVC), and their derivatives, etc.), or electron conducting (e.g., conjugated oligothiophenes, oxadiazole derivatives, etc.) may be used. In an alternative embodiment as shown in Figure 17, the charge separation layer 39 is made of an insulator or insulator-semiconductor composite structure with the key feature being alignment of the majority carrier bands with the absorber donor level (in Figure 3, 36 for n-type or in Figure 8, 84 for p-type). The photosensitizer layer 10 can be a dye or any energy absorbing material or structure, and may include light absorbing atomic or molecular species on a surface (e.g., cis-di(thiocyanato)-N, N-bis-(2,2-bipyridyl-4,4-dicarboxylic acid)-Ru(II), phthalocyanines, carbocyanines, merbromin, [[9-]] o-phenylxanthene, iron cyanate, etc.), or quantum structures (e.g., nanoparticles of CdS, CdSe, or other semiconductors, or metals, or nanolayers of absorbing material). Additionally, multiple types and/or layers of different photoactive species can be used on the photosensitizer layer 10 to maximize the spectrum capture of incident light. In an alternative embodiment, the photoactive species may be imbedded in the front conductive layer to make a single composite layer.